



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,181	01/23/2004	Sachin Navin Chheda	200314086-1	7860

22879 7590 08/08/2008  
HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER
----------

HAMO, PATRICK

ART UNIT	PAPER NUMBER
----------	--------------

3746

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

08/08/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM  
mkraft@hp.com  
ipa.mail@hp.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/764,181	<b>Applicant(s)</b> CHHEDA ET AL.	
	<b>Examiner</b> PATRICK HAMO	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This action is in response to amendments filed on April 22, 2008.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Winick et al., 5,793,608.

Winick discloses a fan cooling system for a computer including two fans 46, each coupled with a thermistor control system that senses the air temperature and regulates and varies the speed of the fans via the voltages of their motors (col. 2, ll. 5-18), the fans creating air flows through the chassis of a computer, the chassis including plenum 24 that acts as a duct in that it directs the flow to heat sinks 38, 39, 43 to cool a chip and other electronic devices within the chassis. In regards to claims 18 and 19, Winick discloses that power supply fans are controlled by a thermistor, which senses ambient air temperature, thereby increasing the speed of the fan by regulating the voltage of its motor (col. 2, ll. 10-17). Because a thermistor functions by varying a resistance in response to temperature, it is inherent that the thermistors had to be chosen based on a reference temperature or otherwise calibrated by a technician to respond to specific air

temperatures with corresponding signals to the motors. Therefore, it is a property of thermistors that a pre-defined parameter has been selected and that the temperature being measured by the thermistor is in effect being compared to this reference temperature. Furthermore, the ambient temperature is a performance metric of the fan in that, if the temperature of the chassis is acceptable, then the fans are adequately serving their purpose, or performing well.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winick in view of Bhatia, 6,299,408.

Winick, as discussed above, discloses all of the limitations substantially as claimed except that the first motor and the second motor are removably coupleable with the fan cooling system.

However, Bhatia teaches a computer cooling fan where the blade portion of the fan 710 (see fig. 8) is separate from the motor 210 and driven via the motor by flexible shaft 705 so that there is a variety of options in placement of the motor (col. 6, ll. 12-20) while decreasing the overall size that comes with an integral blade/motor fan (col. 1, ll.

15-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the computer cooling fans of Winick with the separate blade and motor fans of Bhatia in order to decrease the space taken up by the fans and to increase options of where to place the motors. It would further have been obvious to one of ordinary skill that the motor, shaft and fan all being separate pieces, the motor would now be removably coupleable, in case of motor wear or the like.

Claims 1-9, 11-16 and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura, 5,414,591 in view of Cipolla, 6,791,836.

Kimura discloses a storage system for electronics using a plurality of blower fans 13 to pass cooling air through a duct 2 (see fig. 10) in a plurality of disk units 31a and conveying the flow to heat sinks 18 positioned on the electronic components such as circuit boards 32. The fans are operated at a first operating speed (col. 5, ll. 23-26), and a plurality of current monitoring devices 21 determine the amount of current used by each respective motor driving each fan (col. 14, ll. 49-50).

However, Kimura does not disclose the following taught by Cipolla: first fan 104 coupled with first motor 103, a second fan 104 coupled with a second motor 103, a control system (148, 136, 116, 22, 114, and 120) coupled with both motors 103 and 104, first and second motors of variable speed (col. 4, ll. 59-64), a motor performance monitoring system (116 and 114) determining a performance metric 114 for each motor, first and second tachometers 114 determining the rotational speed of the first and second motors respectively (col. 4, ll. 44-48), a comparator 116 for comparing

Art Unit: 3746

measured performance metrics of each motor with pre-defined parameters (col. 5, II. 1-12), a power control subsystem 120, a controller 116, and controller 116 is coupled with power control subsystem 120 and generates a command to power control subsystem 120 in response to a signal from the comparator 116 (col., I1.59-64 and col. 5, II. 1-12).

It would have been obvious to one of ordinary skill in the art to have substituted the more robustly-controlled active control fans of Cipolla for the nominal, relatively primitive passive controlled fans of Kimura in order to better control the flow of cooling air in response to the requirements of the electronic devices being stored in the storage system of Kimura.

Regarding the limitations that the first motor and second motor are removably couplable with said fan cooling system and disengaging the first fan motor, making elements of an apparatus separable fails to patentably distinguish this invention over the prior art. (See MPEP § 2144.04.V.C). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the motor removable from the fan cooling system.

Regarding the limitation that the controller causes said power control subsystem to dynamically alter the operating speed of said second fan when said performance metric of said first motor exceeds said pre-defined parameter, Kimura teaches that the operating speed of a second fan is altered when the first motor exceeds a performance metric, where the performance metric is current (col. 15, I1.23 -53). Cipolla teaches that controller 116 causes power control subsystem 120 to dynamically alter the operating speed of one or more fans based on pre-defined parameters (col. 4, II. 59-64 and col. 5,

II.1-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kimura in view of Cipolla to detect another operational condition of the fan.

Claims 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied in claims 1, 4, and 11 above, and further in view of Olarig 2003/0112600.

The references as applied above teach all of the limitations substantially as claimed except for the state machine (page 2, paragraph 26, II.3-5) taught by Olarig. Olarig teaches that a state machine and a controller are essentially interchangeable in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the controlled fan flow of the references as applied above in view of Olarig in order to substitute a controller with a state machine (Olarig, page 2, paragraphs 23 - 26).

### ***Response to Arguments***

Applicant's arguments filed April 22, 2008 have been fully considered but they are not persuasive.

#### **35 U.S.C. § 102(b) – Claims 1, 3, 18 and 19**

Applicants argue that Winick fails to anticipate claims 1, 3, 18 and 19 because it fails to disclose "a duct system for conveying said first air flow and said second air flow to at least one heat sink." Applicants argue that the air flow generated by only one fan

Art Unit: 3746

46 is conveyed over any of heat sinks 38, 39, 43, using the arrows supplied in fig. 1 as evidence of this assertion. However, the arrows in fig. 1 are merely illustrative and the examiner would like to point out that Winick discloses no dividers of any kind within plenum 24 that would differentiate the space from which the two fans draw air so that air drawn into either fan passes over the heat sinks.

Moreover, applicants also argue that the plenum of Winick does not constitute a duct as claimed because it does not “convey” (claim 1) or “guide” (claim 18) the air flow. The examiner respectfully disagrees with this characterization and reasserts that interpreting the plenum as a duct system is within examination guidelines of reading each and every claim with the broadest reasonable interpretation. If not for the plenum, a confined space defined by the walls of the casings, the fans would draw in air flow from outside of the casing as well as from the immediate surroundings of the electronic components. The boundaries of the plenum define the only passageway for air entering holes 18 out of the casing, which is through fans 46. Therefore, it is reasonable to interpret the plenum as guiding and conveying the fluid flow.

35 U.S.C. § 103(a) – Claims 2 and 11

The argument that the combination of Winick and Bhatia does not disclose the duct system as claimed is rendered moot by the response above, wherein examiner reasserts the interpretation of the plenum of Winick as a duct system as a proper interpretation.



Applicants also argue that Bhatia does not teach that "said first motor and said second motor are removably coupleable with said fan cooling system" (claim 2) or that "a plurality of variable-speed fan motors removably coupleable with said redundant fan cooling system" (claim 11). However, the examiner feels that this was duly addressed in the prior rejection, reiterated above. Bhatia teaches a single fan with three *separate* pieces- motor, shaft, and blades- coupled to each other. That the pieces are separate as opposed to the fans common in the art, such as Winick, wherein the blades are integrally placed on the motor, makes it obvious that the pieces are removably coupled. Separate pieces are removable from each other. Furthermore, because Winick teaches a plurality of fans, it would have been obvious to apply the removably coupled blades and motor to each fan disclosed by Winick, thereby meeting the limitations of claims 2 and 11 that recite two or a plurality of fans and motors.

35 U.S.C. § 103(a) – Claims 1-9, 11-16 and 18-22

Applicants argue that the combination of Kimura and Cipolla does not satisfy the requirements of a prima facie case of obviousness.

Applicants argue that Kimura does not teach "a duct system for conveying said first air flow and said second air flow to at least one heat sink." However, in arguing that Kimura fails to disclose this because the air flows of separate ducts remain separate, thereby teaching away from the claimed embodiment, applicant seems to be arguing that which is not claimed. A duct *system* is claimed for guiding air flow to *at least one* heat sink. The separate ducts guide separate flows to separate heat sinks. The ducts

together make up a duct system, and all the flow is directed to a heat sink. Whether or not it is the same heat sink, same duct, or same flow as another duct does not matter as far as the claims are recited. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that inventions of Kimura and Cipolla are improperly combined, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In the present case, the active control taught by Cipolla is a technological improvement over the passive control of Kimura that would certainly make some components of Kimura superfluous and redundant, but it would not make the combination inoperable to apply the principle of active cooling as taught by Cipolla to Kimura.

In regards to applicant's arguments that the facts of *In re Dulberg* were significantly different from that present in this application and that the court's holdings that "if it were considered desirable for any reason to obtain access to the end of [the prior art's] holder to which the cap is applied, it would be obvious to make the cap removable for that purpose" does not apply, examiner respectfully disagrees. Removing a motor from its assembly for routine testing and maintenance is common in the art, and

provides a very compelling reason for removability. In the examiner's opinion, this satisfies the holding of the court.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICK HAMO whose telephone number is (571)272-3492. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

/Patrick Hamo/  
Patent Examiner, AU 3746